

available from a variety of retail sources. Cable operators have supplied switching devices on request as part of regulations governing cable for the last several years. These devices could allow subscribers' receivers and VCR's to have all the signals that do not need to pass through a converter / descrambler. Even though notification of availability was required by regulation, the demand for these devices was extremely low for either antenna switching or unscrambled signal by-pass. Nearly all cable operators still have substantial inventory of these devices. If the TV's or VCR's tuner is subject to Direct Pick Up, tuner overload, or other problems, these techniques will be frustrated and all cable signals will have to pass through the converter / descrambler before the TV or VCR at all times.

Most manufactures of set-top converter / descramblers offer either an external or internal automatic by-pass switch. Some manufacturers offer both. When the converter / descrambler is turned off, the switch automatically connects the cable directly to the TV or VCR just as if it were an antenna. When the converter / descrambler is turned back on, the converter / descrambler is connected to the TV or VCR. The subscriber must remember to tune the TV or VCR to the output channel of the converter / descrambler. Remote controls with advanced features are available which can be set up so that they automatically tune the TV or VCR to the output channel of the converter / descrambler when the converter / descrambler is turned on. Zenith makes such a remote control. The feature which automatically tunes the TV or VCR to the output channel of the converter / descrambler is called a "Macro" feature after the similar function on personal computers. Once set up, its use is automatic.

This by-pass switch approach is most beneficial when there are just a few scrambled channels and the majority of channels are not scrambled. This has been the case in most cable systems. The provisions of the Cable Act and the desire of subscribers for multi-channel Impulse Pay Per View is changing all of this. In the coming years, the majority of channels will be scrambled in the majority of cable systems. This significantly reduces the attractiveness of the by-pass switch.

**12.11 *To what extent are cable converters or other devices used by cable systems to resolve technical problems such as signal leakage?***

The full extent of cable converters usage is for resolving technical problems such as signal leakage, inadequate tuner range, direct pick up, etc. These are the primary uses of converters in cable systems today.

If a subscriber chooses to take a scrambled service, the converter / descrambler can also serve the role of the converter if the subscriber's TV or VCR has tuner deficiencies. It is not known what fraction of converter / descramblers serve that dual role.

The converter or converter / descrambler play an important role in protecting the subscriber's TV and VCR from lightening damage. If the TV or VCR has not been designed to be adequately immune to such surges, the presence of the converter or converter / descrambler can save the subscriber substantial repair costs by its ability to absorb the hit.

**13.1 *What types and portions of currently available consumer TV equipment include such features?***

While we do not have access to statistics on the population of products which have such features, we can say that it is our experience with our subscribers that these features are available on more expensive products, usually with screen sizes of 25" and above. The majority of receivers 19" and below appear to be offered for portable use or at the lowest possible prices which preclude advanced features.

It is our experience that many subscribers are confused by the features they have purchased and do not know how to use them. Frequently, our service people are asked for help in understanding how to operate this equipment.

Often the subscriber does not know he has a feature like Picture-In-Picture. He purchased a screen size and cabinet style in an acceptable price range and takes it home. The operating manual is rarely read and the warrantee form usually lost.

The "power user" who studies the manual and understands how these features work, generally has little or no problem with cable equipment or maximizing his enjoyment of both his cable subscription and the features of his TV and VCR. Usually, those who are having difficulty with the cable hardware have even more confusion over the operation of the advanced features of their TV or VCR.

**13.2 *How are these features affected by the various methods of cable signal delivery, particularly with respect to techniques and methods cable operators use to protect against theft of service?***

Subscribers who take just the Basic Service Tier or its equivalent experience no impact on the features of their TV or VCR since in almost no case are these signals scrambled. These subscribers not only have the broadcast channels but also the public, educational and governmental channels to enjoy with their equipment.

Subscribers in cable systems with just trapped premium service also experience essentially no impact. But the provisions of the Cable Act and the desire for Multi-Channel Pay Per View will make these situations rare.

Scrambling can be implemented in ways that substantially preserve the utility of consumer electronic features.

**13.3 *How many channels of cable service does currently available TV equipment accept, how does this vary across different equipment and what are the frequencies of these channels, including their associated video and aural carrier frequencies?***

It is Time Warner's experience that the expansion of channel capacity for cable systems and for consumer electronics products is not in synchronism. This is because cable systems upgrade their channel capacity when technology permits and subscribers demand more choice. This typically done during a system upgrade every ten to fifteen years. But all systems are not upgraded in lockstep; each is on its own schedule based on plant age, franchise renewal, etc. All subscribers in a given community are presented with increased capacity upon rebuild. Only a small fraction of subscribers will be in the market for new TV's and VCR's and will then be able to take direct advantage of the increased capacity through "Cable Ready" products. The remainder will have to either choose to not accept the increased channel capacity or

**13.4.1 *Are any new consumer TV equipment features anticipated or expected in the foreseeable future that would pose compatibility issues different from those indicated in the 1992 Cable Act?***

The Consumer Electronics business is highly competitive. Since there is gross over capacity to produce and since that capacity increases every year, the competition is fierce. New features lists are a critical trade secret which is beyond our access. It is difficult to imagine new features which will have substantially different compatibility issues.

It is likely that there will be an interest in "Multi-Media". But it is not clear what that is or how it will impact the design of Consumer Electronics products.

Wide angle 16 x 9 aspect ratio receivers have recently been introduced at prices around \$ 5,000. They do not offer any new features. A minimal modification of Picture-In-Picture is offered called Picture-Outside-of-Picture. This poses no new problems. Other new services include the Extended Data Service using field two of line 21. This also poses no new problems.

We know that some manufacturers are contemplating building in equipment to receive Direct Broadcast Satellite services. This can be done in ways that are compatible with cable service. It is also possible to do this in a manner that deliberately frustrates the simultaneous subscription to cable. We do not have access to the details of these designs and so do not know what is being planned. We hope these products will either be fully "Cable Ready" or not tune the cable channels at all.

The Commission has invested huge resources and energy in cooperation with the proponents and representatives of the appropriate industries in pursuit of a Digital HDTV standard for the U.S. This new service will give rise to new Consumer Electronics products. It is possible to implement these products from the beginning in a manner that is much more compatible with cable television. With the use of an appropriate Decoder Interface Connector, the encryption and addressability circuits can remain outside of the receiver and VCR in component form. This preserves the cable operator's ability to protect the signal and replace the circuits if they become compromised. At the same time, the Consumer Electronics industry can provide interesting features in its products. The subscriber is not at risk if the external signal protection circuits need to be changed. Indeed, given the embryonic nature of digital technology, it seems likely that encryption, security and other digital transmission techniques will evolve over time. Consumers are unlikely to make the significant investment in new TVs and VCRs which will be necessary for HDTV to become commercially viable unless the Commission takes steps now to assure that such equipment can remain operable as refined security techniques are introduced. The only method currently available to achieve this goal is to require that all HDTV reception equipment include the ANSI/EIA563 Decoder Interface Connector.

The role of artists and the protection of their copyrights will be especially important in launching a new service with limited receivers at first. If artists saw a small market which also was vulnerable to signal theft, these two factors would discourage participation. Artists must be confident that even though HDTV penetration will start slowly, their participation in HDTV is protected. In that way, more artists will contribute the fruits of their labors and HDTV will grow. The alternative is disastrous. If theft of services becomes an early part of HDTV because of inadequate signal protection, the service will be still-born.

**13.4.2 *What equipment other than receivers and VCRs are affected by the compatibility relationships addressed herein?***

While TV's and VCR's have been the focus of compatibility discussions, there are a number of other devices which need serious consideration.

The most important other device is the set-top converter which has been available to subscribers for

purchase for some time. The Cable Act also requires that the availability of such devices be "promoted". Such a device has all the same potential for confusion and frustration as TV's and VCR's. Subscribers purchase these set-top devices because of inadequacies in the tuners of their TV's and VCR's. If the converter's tuner is likewise deficient, further confusion and frustration will result. We believe that these converters should comply with all of the same technical requirements as are necessary for Cable Ready TV's and VCR's. This includes tuner performance requirements and the need for the ANSI / EIA 563 Decoder Interface Connector so these devices are usable with scrambled channels. Further, we believe that devices which are sold just as "remote control adapters" for older TV's and which do not claim to be meant for use on cable should not tune cable channels. This will avoid consumer confusion and the purchase of a less expensive device not intended or designed for proper use on cable.

Other devices are connected to cable in a manner that can cause difficulties. Home entertainment systems include a variety of other equipment with by-pass switches connected in-line with the cable signal. Examples include Laser Disk players, Satellite receivers, and special devices such as the Philips CD-Interactive device and the Kodak Photo CD machine. In addition, video games, video camcorders, and Multi-Media devices are available. All of these devices are intended to display pictures on the TV or allow them to be recorded on a VCR. When not in use, the cable signal passes through them. This must be done in a manner which causes no leakage, ingress, signal loss, noise, or distortion. These devices must be able to pass the entire cable spectrum or else higher channels will be degraded or deleted. The sheer number of these devices makes it critical that these problems are avoided. A particularly difficult situation arises with FM radio tuners. These devices were never intended to be connected to cable. Internal shielding is not normally a design issue. Usually unshielded twin lead is used to connect the antenna terminals on the outside of the unit to the tuner inside. If such a device is connected to cable, it will radiate cable frequencies and cause leakage and ingress.

Passive devices such as splitters and switches as well as after market cables and the push-on cables that come with VCR's can cause problems with leakage and ingress. These devices should be rated for the maximum frequency of cable signal they will pass. It appears this should be at least a GHz.

Optical audio disks which record have been recently introduced. It can be envisioned that recording video disks may someday be available. They could be used as VCR's are used today. When these products are introduced, they should be fully "Cable Ready" if they include a tuner which tunes the cable channels.

As Line 21, Field Two standards are approved by the FCC, new services will be possible. Included are signals for the automatic setting of clocks in TV's and VCR's. It can be easily foreseen that stand alone clocks and clocks in appliances may be designed in a manner that can be connected to cable for automatic setting. This presents a number of hazards including excessive signal splitting and consequentially poor pictures. Also, if these devices are inadequately shielded, cable signals could leak out and interfering ingress signals can leak into the cable system.

### 13.5 *What features should a device incorporate to be considered cable compatible or cable ready?*

The most important features for a device to be cable compatible or cable ready are:

- 1) A tuner with specifications comparable to set-top converters.
- 2) The ANSI / EIA 563 Decoder Interface Connector.
- 3) ~~The ability to pass remote control signals to the decoder.~~

**13.6.a *How many channels should a device be able to receive, and in what frequency ranges should those channels be, in order to be considered cable ready or cable compatible?***

It will be appreciated that the definition of "Cable Ready" is a situational definition. For example, in the new 150 channel system in Queens New York, no existing TV or VCR can satisfy the definition of "cable ready" since none can tune the 1 GHz spectrum containing 150 cable channels. For subscribers to be able to enjoy all the signals available, a set-top converter / descrambler must be supplied by the cable operator.

It is not in the public interest to restrict the choice made available to subscribers so that confusion over tuning capacity can be avoided. When technology makes it possible to add more channels and when subscribers wish access to more channels, they should not be prohibited from access to such choice. At the time when more channels are available, subscribers should be able to purchase new TV's or VCR's or supplementary equipment which makes those channels available. It is important to have a uniform method of specifying channel capacity so that the purchase of new equipment of adequate capacity is facilitated.

The specification of the number of "cable ready" channels should be done uniformly and in an easily understood manner. Currently, the number is given as the sum of the broadcast VHF (12) plus UHF (69) plus cable channels which can be tuned. A purchaser who is told that the TV will tune 117 channels can be forgiven for being impressed and thinking that it is adequate. Yet this only accommodates the 36 channels of a 300 MHz cable system. More and more, this is not enough. Under this counting scheme, a "cable ready" TV for use in the Queens New York 150 channel system needs  $12 + 69 + 150 = 231$  channels! A standard method of specifying channel capacity of products and cable systems is required.

TV's and VCR's should be specified as "cable ready for XXX channel cable systems." Cable operators should clearly indicate the number of channels they have available and indicate as far in advance as possible their plans for expansion. That way subscribers can make the best choices when purchasing new TV's and VCR's. Cable operators should also indicate the number of scrambled channels and any plans for expanding that number.

**13.6.b *What other cable system operating characteristics should a device be able to accommodate to be considered cable compatible?***

It bears repeating that the use of scrambling will increase because of subscriber needs for Multi-Channel Impulse Pay Per View, Near Video On Demand, and because of the provisions of the Cable Act. Thus the ANSI / EIA 563 Decoder Interface Connector is a critical factor in the definition of "Cable Ready". This is even more important on VCR's.

This does not mean that ANSI / EIA 563 has reached the full potential of the concept. On the contrary, there are numerous potential improvements which can increase the utility of both Consumer Electronics products and Cable Services. The EIA / NCTA Joint Engineering Committee should commence development of these advanced standards. They should, however, be done in a "backwards compatible" manner so that existing products and those still in production are not disadvantaged. The EIA has a long history of compatible upgrades of standards. A standard is said to be "backwards compatible" if it retains compatibility with older units when it is upgraded to accommodate new technology.

ANSI / EIA 563 should be implemented as soon as possible. Simultaneously, the Joint Engineering Committee should begin work on defining backwards compatible advanced versions. These will probably be called ANSI / EIA 563 A, B, C, etc. just as other standards have suffix versions (such as the computer peripheral EIA standard RS 232 C). This approach allows consumers to benefit from standards while providing for future upgrades. A time delay, perhaps of two years, should be allowed for implementing

the latest version of ANSI / EIA 563 x from the date of adoption by the two industries of the upgraded standard and its endorsement by ANSI.

Priority Upgrades to be considered for ANSI / EIA 563 include:

- \* Make the remote control signal pass through to the decoder non-optional.
- \* Enabling the descrambler to "force-tune" the TV's or VCR's channel selector to the correct channel to facilitate functions such as access to Near Video On Demand, Emergency Alert, or pre-ordered Pay Per View programs. Data on all channel changes should be passed on to the decoder.
- \* The addition of an Intermediate Frequency output from TV's and VCR's to accommodate scrambling systems which operate directly on the carrier of the signal. One of these systems, the Zenith PM approach, is very difficult to decode at baseband. This upgrade would satisfy that market segment while also beginning the evolution towards products which will work with Digital Video Compression modules.

The ability to "force tune" the channel selection device and to use extensive On Screen Displays is critical for such exciting new cable services as Multi-Channel Impulse Pay Per View and Near Video On Demand. Without forced-tuning and OSD, these services become impossible.

**14.1 *To what extent could existing cable equipment be modified to be more compatible with TV receivers, VCRs and other consumer TV equipment (and how much would it cost and how long would it take to make the necessary changes), while still providing for adequate protection against theft of service?***

Existing equipment, both Consumer Electronics and cable, are designed for maximum economy of mass production. As such it is not practical to modify such equipment after it is produced. Not only would this be expensive, but reliability would be significantly degraded.

Existing equipment can be made more compatible with the addition of external devices such as "Universal" remote controls with built-in timers and external by-pass switches.

If subscribers who really need these upgrades are given newer equipment, the existing equipment can continue to serve those who have no need for these more expensive options either because their consumer electronic products are not equipped with advanced features or because they do not care to use them.

**14.2 *What new methods for providing cable systems security are being developed, when will they be available and how much would they cost (to both consumers and cable subscribers)?***

Suppliers to the cable industry and would-be suppliers to the cable industry are continuously developing new hardware to provide new services, increase security, or add features to existing services.

A number of enhancements to analog scrambling become available every year at minimal cost. In some cases they are backwards compatible and can be used in existing systems. In other cases, they can only be used where a new scrambling system is installed or an old one completely replaced.

There has been a lot of discussion of Broadband Descrambling. This work has been done by entrepreneurs not employed by the traditional suppliers to the cable industry. The market share leaders have investigated Broadband Descrambling during the 1980's and determined it to not be practical. This does not necessarily mean that new inventions and insights might not change this situation. But it does caution for controlling enthusiasm. This is not something brand new. It is another look at something that wasn't practical in the past. The details revealed in FCC filings on Broadband Descrambling indicate that costs and other limitations are likely to be similar to those pertaining to Interdiction.

The most energy and research dollars are being expended on Digital Video Compression, DVC. Traps, Interdiction, and Broadband Descrambling are not compatible with DVC. Only the Decoder Interface Connector approach shows promise. DVC is expected to expand program capacity as well as provide more options for better security.

**14.3    *How will new digital transmission techniques affect system security including cost?***

Initially, Digital Video Compression, DVC, is expected to be expensive, between 1.5 and double the cost of analog descrambling. As a digitally based semiconductor technology, its costs can be expected to come down rather quickly, approaching those of analog devices in three to five years from introduction. DVC will provide greater program capacity.

To the naive, digital signals promise perfect security. It should be realized, however, that the computer hacker has access to high speed computing power and the communications facilities to link with others who would also attack DVC security. If there are any flaws in the implementation of DVC security, they will be quickly discovered and exploited.

Both the signal processing circuits and the addressing circuits must remain external to the TV or VCR and be replaceable by the cable operator if they are compromised. They must also be replaceable if new technology makes them obsolete. This is the only way to protect the subscriber from the potential of losing the utility of hardware he purchases.

purchase or rental of supplementary equipment.

To assure compatibility, cable operators should be required to make available optional set-top devices at reasonable costs to subscribers who request such devices that include "... functions that permit the subscriber --

- (I) to watch a program on one channel while simultaneous using a video cassette recorder to tape a program on another channel;
- (II) to use video cassette recorder to tape two consecutive programs that appear on different channels; and
- (III) to use advanced television picture generation and display features;"

These devices are readily available and can provide the subscriber with compatibility at reasonable costs.

Cable operators should be required to make available component descramblers which comply with the ANSI / EIA 563 Decoder Interface Connector to subscribers who purchase TV's and VCR's with the Interface. In the limited cases where existing scrambling systems are in use which do not have such a descrambling device available, these should be "grandfathered" for a reasonable period of time and the Joint



almost afford to put a million transistors in a set-top device. The rate of progress of semiconductor technology allows us to project that we will be able to afford to put several million transistors in a set-top device in five or six years. It is much too early to freeze the evolution of DVC. A great many other unknowns hamper us. Besides compression, there is the modulation scheme, the addressability and conditional access method, the multiplexing means, the time domain equalizer, and error detection and correction. All of these issues need extensive further study and development.

/ EIA 563 Decoder Interface Connector. Codes for control of force tuning and pay per view ordering are also very important.

**14.12 *Should consumer electronics equipment be required to be equipped with two cable input ports to accommodate dual cable systems?***

Since dual cable systems are in such a minority and since no new ones are being built, it seems to be an unnecessary burden to require dual cable inputs. After market remote controlled switches would be desirable.

However, an antenna input for broadcast stations which do not wish to grant Retransmission Consent or which pose unreasonable demands may be of value to the subscriber. In switching to this antenna port, the tuning system would have to switch to the broadcast channel plan. When switching back to cable, it would have to operate under the cable channelization plan.

**14.13 *What standards should be specified as technical requirements with which TV receivers, VCRs and other consumer equipment must comply in order to be sold as cable compatible or cable ready?***

The concept of "cable ready" is really very straight forward. If a product is truly "cable ready" it can be connected directly to the cable system and

- a) Not interfere with the reception of others.
- b) Have sufficient tuner capacity to receive the entire bandwidth transmitted by the cable system.
- c) ~~Be equipped with a Decoder Interface Connector to allow special features of the product~~

reception problems on other receivers.

- 3) Direct Pick Up Interference: The internal circuits of the TV or VCR must be adequately shielded or not to pick up signals off air directly. When this shielding is inadequate, signals directly

that make them a separate pay service. Subscribers can then elect to use the switch or pay for the channel.

It is not well recognized that the invention of the cable converter was not to tune more channels. The first converters did not tune more than twelve channels. The cable converter was invented to overcome deficiencies in TV receiver tuners. They were meant first to combat the direct pick up problem described above. Then, as more channels were added to cable service, the cable converter took on added technical burdens. The cable converter was required to counter the effects of non-linear performance and "image response" of less expensive tuners. Improved noise performance is also important. Lastly, the tuner must not back feed interfering signals into the cable system.

Potential for Evasion: All TV's and VCR's which tune cable channels must comply with all of the technical specifications for cable ready. If a TV or VCR does not comply with the technical definition of cable ready, it must only tune the broadcast channels. Otherwise consumer confusion and frustration is inevitable. To allow products to be sold which tune cable channels but do not comply with the technical definition of "Cable Ready" is to provide an opportunity for Evasion of the intent of Congress when it wrote section 624 A (c) (2) (A): "Regulations Required ... to specify the technical requirements with which a television receiver or video cassette recorder must comply in order to be sold as 'cable compatible' or 'cable ready'." Merely not using these terms should not be an escape mechanism for producing

Products which do not comply with the technical definition of "Cable Ready" should not tune the cable channels. Otherwise consumer confusion and frustration will result.

*control function, either through a manually invoked control on the device itself, or through an electronic signal that can be transmitted to the device from the cable headend?*

Nearly all converters and converter / descramblers which are sold today have models which allow addressable control of the operation of the remote control feature from the cable headend. While there is additional expense in having the remote control circuitry, addressable disabling of it is just a software function in the already addressably controlled microprocessor. Computer code simply tells it to ignore or to respond to the signals from the Infra Red receiver circuitry. Many cable operators, including Time Warner, have utilized this feature as a mechanism to insure that this function is available only to authorized subscribers. Time Warner stands fully prepared to comply with Sec. 624(c)(2)(E) of the 1992 Cable Act.

**16.4    *What portion of the market currently rents each type of cable remote control unit?***

Nearly all subscribers who have remote controlled converters or converter / descramblers rent the remote controls.

**16.5    *To what extent are remote control units that are compatible with the converter units used by cable systems available to consumers now?***

Almost without exception, commercially available "Universal" remote controls are readily available which are fully compatible with converters and converter / descramblers used by cable systems. This has been the case for at least four or five years.

**16.6    *To what extent are the remote control features of cable converters compatible with existing commercially available remote control units, including the "universal" remote control design?***

Subscribers have options which will allow them to purchase remote controls that are fully compatible with the features of converters and converter / descramblers.

**16.7    *What types of such units are available and how much do they cost?***

"Universal" remote controls come in two types, pre-loaded codes and learning devices. The pre-loaded code devices have nearly all the codes for nearly all the functions used in set-top converters and converter / descramblers. The subscriber looks up his model in a small manual that comes with the device and enters an identification number. Some devices cycle through the codes each time the subscriber presses a button. When the set-top converter or converter / descrambler responds in the prescribed manner, the subscriber knows he has found the right code set. He then moves a switch or follows some other procedure to initialize the device. The learning remote controls are more flexible but a little more difficult to initialize. They require using the remote control that came with the device and irradiating the new controller with the old device's codes while the new device is in the "learn" mode. The advantage is that almost any code for almost any feature can be loaded. The disadvantage is that this somewhat complex procedure must be executed correctly. Also, the buttons might not be pre-labeled with the new functions.

Both kinds of units come with "volatile" and "non-volatile" memory. Volatile memory is lost when the battery dies. The unit must be initialized again. This can be very inconvenient and frustrating. When the unit falls between the cushions of the couch, the battery could be dead in a matter of a couple of hours. Non-volatile memory is more expensive, but avoids this problem. It does not forget when the battery dies.

Prices range from under \$20 to well over \$100 depending on capability, style, and place of purchase.

**16.8    *What portion of the market currently owns such units?***

It is not known how many units have been sold. There are dozens of brands, many of which have been available for well over five years. Several million are sold annually. They are available in blister packs in electronics stores and even grocery stores. No one who wants one of these devices has any problem obtaining one. The problems are likely to be the confusion in claims over which one is better and the confusion is setting up the unit. But these are common Consumer Electronics problems that exist in every part of the market.

**16.9** *How can the Commission best encourage the commercial availability of remote control units that are compatible with existing converter units?*

There is no need for the Commission to encourage the commercial availability of these remote control units. They are plentiful now. The free market advertises them and puts them in plain view in a wide variety of locations. The 1992 Cable Act requirement that cable operators notify subscribers of their option to purchase such devices from third party vendors, coupled with the ban on disabling set top boxes from responding to such remotes, should be fully adequate to drive the vibrant competitive availability of such devices.

**17.1.a** *How will projected increases in cable television channel capacity affect the interface?*

The Basic Service Tier subscriber is not impacted by increases in cable capacity. The subscriber who already uses a set-top converter or converter / descrambler is protected because the cable operator replaces these devices. They will be replaced with units having the same or perhaps improved of non-interference with advanced TV and VCR features. The subscriber is therefore no worse off and may even be better off. He has more channels to chose from.

If the subscriber decided to purchase a set-top converter to compensate for deficiencies in his TV or VCR, he once again must make another choice between not taking the new channels, upgrading his converter

I.F. output port on the TV or VCR, even DVC can be accommodated once the specifications of the tuner are upgraded.

**17.2 *Will digital transmissions, including advanced television and video compression change the nature of the interface in ways that should be addressed in this proceeding?***

It is very likely that digital transmission will change the nature of the interface. However, this cannot be addressed in this proceeding since the technology is embryonic. Not enough is known at this point to make intelligent choices. Any regulation created now would likely either be obsoleted and therefore a waste or would stifle the evolution of this important technology.

Some comfort can be derived from the fact that the ANSI / EIA 563 Decoder Interface Connector has baseband video and audio inputs to the TV or VCR. Whatever device is required to handle the digital signal is connected to the cable and the Decoder Interface Connector. NTSC signals are created to use the display technology already owned by the subscriber. If the cable operator is introducing the new technology, he will provide the adaptor box so the subscriber's investment is preserved until such time as the subscriber wishes to make a purchase of new equipment. The remote control signals pass through the TV or VCR to the device plugged into the Decoder interface Connector.

Congress has put a requirement in the Cable Act for these issues to be revisited at a later time when more is known. That is the prudent course.

**17.3 *How would the use of such methods affect the operation of special features of cable subscribers' TV equipment?***

Not enough is known at this time to make intelligent predictions. Care will be taken to maximize the utility



decompressor gives access to one DVC signal and the unscrambled analog channels. If this is not sufficient for a subscriber's tastes, optional additional decompressors can be provided at reasonable costs.

**17.6.b *In this regard, we seek assistance in developing rules that provide the least possible obstacle to technical improvement in both cable television and consumer electronics consistent with accomplishing the stated objectives of the law?***

It is extremely difficult to create rules that anticipate and don't interfere with technological advancements in Consumer Electronics products and cable services. The simplest rules are best. It is important to realize that any rules restrict options. Thus these rules should apply to the Basic Service Tier only. This broad based tier provides ample opportunity for use of advanced receiver features on more channels than are available off-air.

On higher tiers or with more advanced services, subscribers must be free to choose between the full utility of features and the availability of the services. The alternative is to preclude the availability of the more advanced services and have regulation force decisions for the subscriber against more choice, more diversity, and more access to ideas and information. That cannot be in the public's best interest. The boundary should be drawn at the Basic Service Tier.

We would suggest that the fundamentals of rules should include:

- 1) Notification requirements by cable operators on the choices subscribers should expect to have to make when they buy equipment for use in cable systems which use scrambling or which are expected to implement scrambling. This should be implemented in two or three months after the rules are issued.
- 2) Notification stickers on Consumer Electronics products which inform purchasers that products which tune cable channels may not necessarily be usable on all of those channels if Direct Pick Up problems exist or if scrambled channels are used. Consumers should be advised that some cable systems have more channels than this product can tune and other cable systems will be

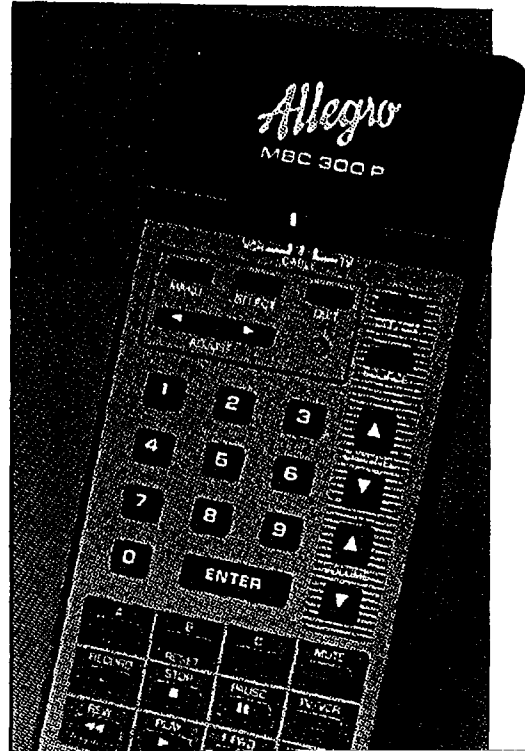
## **APPENDIX 2**

**SAMPLES OF CABLE COMPATIBLE DEVICES  
READILY AVAILABLE TO CONSUMERS**

Mirage Model CV-2030X features include:

# *Allegro by* **ZENITH** **REMOTE CONTROL**

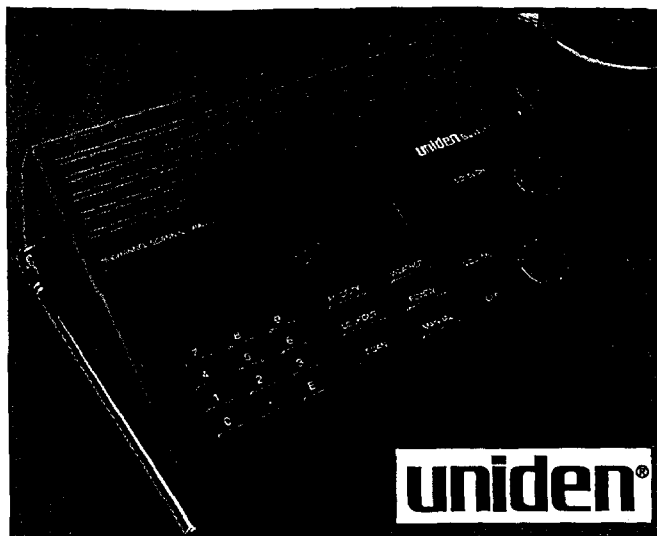
Operate up to 4 units from a single remote control – and it doesn't matter what brands they are! Do you have a Sony VCR, a Toshiba TV and a Phillips cable box, each with its own remote? Instead of fumbling around trying to find the right remote to operate each unit, the Allegro lets you operate all of them, all the time, from a single remote. It's that easy!



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Cables!

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Get complete coverage, police, fire, military, ham – all as it's happening! The Uniden Bearcat 147XLT puts an incredible range of power in your hands. You get:

- 16 channels that you can program to your choice of frequencies
- 10 bands, including all public service bands, 4 "ham" bands, federal and military land mobile bands
- Instant weather data: one button automatically searches for the active weather channel in your area

All scanned at a rate of 15 channels per second.

This Uniden is easy to program and enjoyable to use. Its user-friendly features allow you to:

- ♦ Direct channel access to any channel
- ♦ Channel lock out
- ♦ Priority mode samples your favorite channel every 2 seconds
- ♦ Memory back-up retains frequencies even during a power failure
- ♦ Volume and squelch control

Measures 9" x 6-1/2" x 2-3/4" and weighs 1 lb., 5 oz.

The Uniden is refurbished to work and look like new and comes with a 30 day Warranty.

Orig. Mfr. Sugg. Retail \$189.95

HEARTLAND  
PRICE

Item No. T8-4866

**\$98**

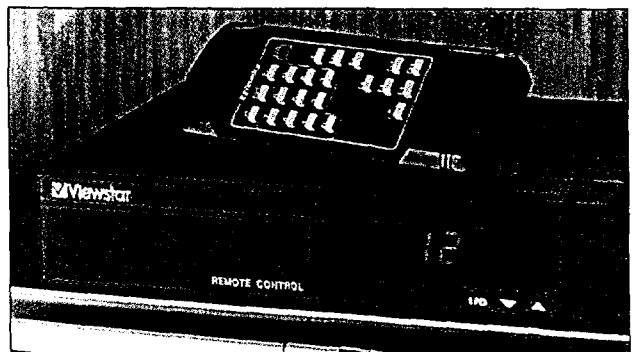
Shipping & Handling \$6.00

## 85 CHANNEL TV/CABLE TUNER

Bring your rotary dial TV into the 90s with the View Star 85 Channel Remote Control TV/Cable Tuner. Model MXC-2020 adds wireless remote control of channel selection, fine tuning, cable ready access and power ON/OFF to any basic television. Simple installation allows you to effectively tune all cable channels (VHF, Mid, Super and Hyper Bands).

### Features include:

- ♦ 85 channel access; unlimited favorite channel memory; Can be used with any TV
- ♦ Uses either cable or VHF antenna input
- ♦ Wireless infrared remote control - ON/OFF,



*Escape the remote jungle with a single handy control*

REALISTIC

A

B

C

POWER

TV

CABLE

VCR

1

2

3



CHAN

4

5

6



LAST

7

8

9

ENTR

0



VOL

REWIND

PLAY

FAST F

NAME

BATT

OFF

MUTE

VOLUME

CHANNEL

1

2

3

PLAY

4

5

6

STOP

7

8

9

FAST F

PRG

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CANCEL

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REVIEW

WEEKLY

ONCE

DAILY (12-1)

TV

CABLE

VCR

AIR

MUTE

AIR

TV

TV

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RECALL

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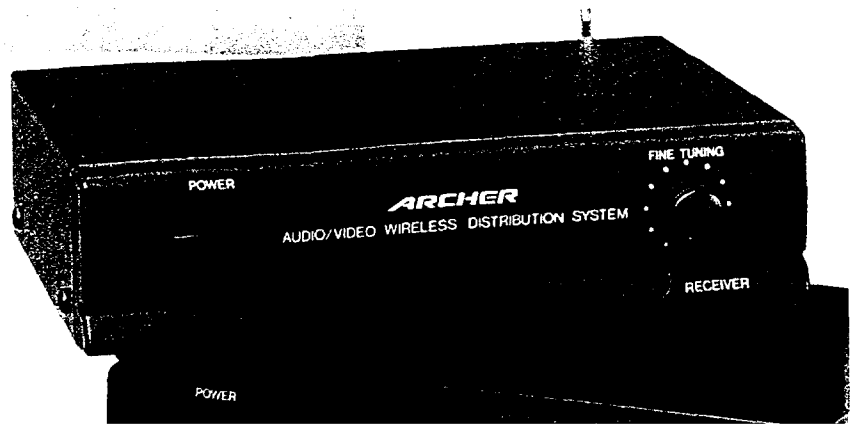
6

RECALL

7

# Control your entire audio/video system with Archer electronics

Control your entire audio/video system with these versatile, inexpensive electronics. Choose from a great line-up of



## **APPENDIX 3**

**NEWS ARTICLES REGARDING ELECTRONIC DEACTIVATION  
OF ILLEGAL DESCRAMBLERS IN QUEENS, NEW YORK**



MAR-18-93 THU 18:06

TIME WARNER CABLE NYC HQ

FAX NO. 2125220153

P.02

TIME WARNER-FLSHG→

2125220153;# 2

# NEW YORK POST